Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

A281.9
A983E
Cop. 2

QUARTERLY CONSUMPTION OF CALORIC SWEETENERS AND COCOA 1/

There is considerable interest in seasonal variation in food consumption. Frequently, such data are needed to explain current market situations. Quarterly data are also necesary for short-run demand analysis. In response to this need, quarterly per capita consumption data for caloric sweeteners and cocoa are presented here for the first time.

Seasonal variation for some of these products is considerably greater than for others. For dextrose and cocoa, consumption usually varies 10 to 20 percent between the low and high quarters of the year but for sugar and corn sirup, the seasonal variation amounts to 30 to 40 percent. Quarterly patterns of consumption--as a percent of annual total--have changed only slightly for any of these products over the periods analyzed.

Annual per capita consumption of each of these products except sugar has increased since the 1950s. The increase has been greatest for corn sirup.

Refined Sugar 2/

Annual per capita sugar consumption has been relatively stable since 1935 (except during World War II). During this period, per capita consumption averaged about 97 pounds annually with only minor year-to-year fluctuations (table 9).

There has been considerable seasonal variation in sugar consumption during 1935-66. Consumption typically was lowest in the first quarter (20-22 pounds per capita), increased in the second quarter (24-26 pounds), and reached a peak in the third quarter (28-30 pounds) before declining in the last quarter (22-24 pounds). Third quarter consumption was normally 35 to 40 percent larger than the first quarter. Consumption of sugar in the second and third quarters rises because use of sugar in commercial soft drinks, fruit drinks, and ice cream increases with warmer weather. Similarly, warm weather stimulates increased household use in home prepared foods and drinks. Moreover, sugar used in processed fruits reaches a peak in the third quarter.

While there was considerable seasonal variation in sugar consumption from quarter to quarter within each year, there has been little change in the quarterly pattern since 1935 (except World War II). The only noticeable change is that first quarter consumption is down nearly a pound and third quarter consumption is up by about the same amount (table 9).

Corn Sweeteners--Dry Basis 3/

Per capita consumption of corn sirup increased substantially, from an average of 8.4 pounds in 1950-54 to 12.4 pounds in 1966 (table 10). The

---

1/ By Frederick D. Gray, Food Consumption and Utilization Section, Economic and Statistical Analysis Division, Economic Research Service.

2/ 100 pounds of refined sugar is equivalent to 107 pounds of sugar, raw value.

3/ Dry basis is commercial weight multiplied by factor 0.92 for dextrose and 0.803 for corn sirup.

Reprinted from the National Food Situation, NFS-119, February 1967, by the Economic and Statistical Analysis Division, Economic Research Service.

ERS-341 FEBRUARY 1967

Table 9.--Cane and beet sugar, refined basis 1/: Estimated per capita consumption, by quarters, 1935-66 2/

Period	Estimated consumption 3/					Percentage of annual total			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Annual total	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
	Lb.	Lb.	Lb.	Lb.	Lb.	Pct.	Pct.	Pct.	Pct.
Average:									
1935-39	22.0	25.1	27.8	22.6	97.5	22.6	25.8	28.4	23.2
1940-44	21.6	22.9	26.7	22.5	93.7	23.1	24.4	28.5	24.0
1945-49	19.0	23.0	26.4	20.3	88.7	21.6	25.9	29.6	22.9
1950-54	21.4	24.5	29.2	21.8	96.9	22.1	25.3	30.1	22.5
1955-59	20.4	25.1	28.1	22.9	96.5	21.2	26.0	29.1	23.7
1960-64	21.2	25.3	28.4	22.4	97.3	21.7	26.0	29.3	23.0
1935	22.0	26.4	27.0	22.4	97.8	22.5	27.0	27.6	22.9
1936	22.7	24.8	26.7	23.1	97.3	23.3	25.5	27.4	23.8
1937	22.7	25.2	27.3	21.2	96.4	23.5	26.2	28.3	22.0
1938	21.3	23.7	27.2	23.0	95.2	22.4	24.9	28.5	24.2
1939	21.4	25.5	30.5	23.4	100.8	21.3	25.3	30.2	23.2
1940	19.9	24.1	28.4	23.3	95.7	20.8	25.1	29.7	24.4
1941	25.7	24.7	29.2	24.7	104.3	24.6	23.6	28.1	23.7
1942	22.0	20.8	23.3	19.5	85.6	25.7	24.3	27.2	22.8
1943	19.0	21.9	24.4	20.8	86.1	22.1	25.5	28.3	24.1
1944	21.6	22.9	28.2	24.1	96.8	22.4	23.6	29.1	24.9
1945	20.6	21.1	22.0	19.1	82.8	24.8	25.5	26.6	23.1
1946	17.2	19.6	21.3	17.0	75.1	22.9	26.1	28.3	22.7
1947	18.9	24.9	29.1	22.2	95.1	19.9	26.1	30.6	23.4
1948	18.7	24.5	29.2	21.7	94.1	19.9	26.0	31.0	23.1
1949	19.7	24.7	30.3	21.7	96.4	20.5	25.6	31.4	22.5
1950	20.2	26.4	32.2	21.8	100.6	20.1	26.2	32.0	21.7
1951	19.5	25.3	27.8	21.4	94.0	20.8	26.9	29.6	22.7
1952	22.5	24.7	28.5	21.4	97.1	23.1	25.5	29.4	22.0
1953	22.8	22.9	29.3	22.2	97.2	23.4	23.6	30.1	22.9
1954	22.0	23.2	28.2	22.2	95.6	23.0	24.2	29.5	23.3
1955	21.3	24.7	28.8	21.5	96.3	22.1	25.7	29.8	22.4
1956	21.1	24.2	28.6	23.9	97.8	21.5	24.7	29.4	24.4
1957	19.3	26.0	26.8	22.9	95.0	20.3	27.4	28.2	24.1
1958	20.3	24.7	27.9	23.9	96.8	20.9	25.5	28.9	24.7
1959	20.2	25.7	28.4	22.1	96.4	21.0	26.6	29.5	22.9
1960	21.8	25.4	29.4	22.0	98.6	21.3	26.0	30.2	22.5
1961	20.7	26.6	28.3	22.1	97.7	21.3	27.2	28.9	22.6
1962	20.7	24.8	29.4	22.3	97.2	21.3	25.5	30.2	23.0
1963	22.3	24.8	26.9	22.6	96.6	23.1	25.7	27.9	23.3
1964	20.6	24.7	28.2	23.0	96.5	21.3	25.6	29.3	23.8
1965	21.1	24.5	28.3	22.6	96.5	21.9	25.4	29.3	23.4
1966 4/	21.6	24.2	29.2	22.4	97.4	22.2	24.8	30.0	23.0

1/ 100 pounds of refined sugar is equivalent to 107 pounds of sugar raw value.
2/ Per capita consumption based on entire population including military.
3/ Consumption reflects sugar disappearance through marketing channels.
4/ Preliminary.

Source: Calculated from Sugar Reports, and U.S. Food Consumption, Statistical Handbook No. 364, June 1965, p. 157, and subsequent supplements.

Table 10--Corn sweeteners, dry basis 1/: Estimated per capita consumption, by quarters, 1949-66 2/

Period	Estimated consumption 3/					Percentage of annual total			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Annual total	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
	Lb.	Lb.	Lb.	Lb.	Lb.	Pct.	Pct.	Pct.	Pct.
	Dextrose								
Average:									
1950-54	1.1	1.0	1.2	1.1	4.4	24.5	23.6	28.1	23.8
1955-59	1.0	1.1	1.0	1.0	4.1	23.2	25.4	26.2	25.2
1960-64	1.1	1.2	1.2	1.1	4.6	24.1	25.7	25.8	24.4
1949	1.1	1.0	1.4	1.0	4.5	23.7	21.0	32.2	23.1
1950	1.1	1.2	1.5	1.1	4.9	21.3	24.8	31.1	22.8
1951	1.1	1.0	1.3	1.1	4.5	23.8	21.8	29.9	24.5
1952	1.1	1.0	1.2	1.0	4.3	26.0	23.4	26.7	23.9
1953	1.1	1.0	1.2	1.1	4.4	25.7	23.2	26.6	24.5
1954	1.0	1.0	1.1	1.0	4.1	25.6	24.6	26.4	23.4
1955	.9	1.0	1.0	1.0	3.9	23.2	25.3	26.5	25.0
1956	1.0	1.0	1.0	1.0	4.0	23.3	25.1	25.8	25.8
1957	.9	1.0	1.0	.9	3.8	23.0	25.6	26.1	25.3
1958	1.0	1.1	1.1	1.1	4.3	23.1	24.9	26.6	25.4
1959	1.0	1.2	1.1	1.1	4.4	23.3	26.1	26.1	24.5
1960	1.0	1.1	1.1	1.0	4.2	24.2	25.6	26.3	23.9
1961	1.0	1.1	1.1	1.1	4.3	23.5	26.1	25.8	24.6
1962	1.1	1.1	1.2	1.1	4.5	24.0	25.1	26.0	24.9
1963	1.1	1.3	1.3	1.3	5.0	22.2	25.6	26.4	25.8
1964	1.3	1.3	1.2	1.1	4.9	26.4	26.2	24.6	22.8
1965	1.2	1.2	1.3	1.2	4.9	23.8	25.0	26.6	24.6
1966 4/	1.1	1.3	1.4	1.3	5.1	22.6	24.8	27.4	25.2
	Corn sirup								
Average:									
1950-54	2.0	1.9	2.3	2.2	8.4	23.3	22.8	27.6	26.3
1955-59	2.0	2.1	2.6	2.2	8.9	22.3	24.3	28.8	24.6
1960-64	2.2	2.6	3.1	2.7	10.6	21.0	24.4	29.4	25.2
1949	1.9	1.8	2.1	2.3	8.1	23.7	22.3	25.2	28.8
1950	1.9	1.9	2.6	2.2	8.6	21.8	22.3	30.5	25.4
1951	2.1	1.8	2.2	2.4	8.5	24.6	21.5	26.2	27.7
1952	1.9	2.0	2.2	2.1	8.2	23.1	23.7	27.2	26.0
1953	2.0	1.9	2.2	2.2	8.3	23.8	23.3	26.8	26.1
1954	1.9	1.9	2.3	2.2	8.3	23.0	23.1	27.5	26.4
1955	2.0	2.0	2.5	2.2	8.7	22.6	23.2	28.8	25.4
1956	2.0	2.1	2.5	2.2	8.8	23.0	24.2	28.3	24.5
1957	1.9	2.1	2.5	2.1	8.6	21.6	24.0	29.8	24.6
1958	2.0	2.2	2.7	2.2	9.1	22.3	23.9	29.5	24.3
1959	2.0	2.4	2.6	2.2	9.2	21.8	26.2	27.8	24.2
1960	2.1	2.3	2.9	2.3	9.6	22.3	23.6	30.0	24.1
1961	2.1	2.3	2.9	2.4	9.7	21.5	23.9	29.5	25.1
1962	2.2	2.5	3.1	2.8	10.6	21.0	24.0	28.8	26.2
1963	2.1	2.9	3.2	2.9	11.1	18.9	26.1	29.1	25.9
1964	2.6	3.0	3.6	3.0	12.2	21.7	24.2	29.6	24.5
1965	2.7	2.9	3.6	3.0	12.2	22.1	23.8	29.6	24.5
1966 4/	3.0	2.7	3.7	3.0	12.4	23.9	22.0	29.6	24.5

1/ Dry basis is commercial weight multiplied by factor 0.92 for dextrose and 0.803 for corn sirup. Dextrose data includes crude, hydrous and anhydrous dextrose. Corn sirup data includes estimates for corn sirup solids. 2/ Per capita consumption based on entire population including military. 3/ Consumption reflects corn sweetener disappearance through marketing channels. 4/ Preliminary.

Source: Calculated from Sugar Reports.

increase in consumption resulted largely from improved corn sirups and a widening of the spread between corn sirup and sugar prices. The increase in consumption was about evenly distributed among quarters.

There has been considerable seasonal variation in corn sirup consumption. During 1960-64, per capita corn sirup consumption averaged 2.2 pounds in the first quarter, increased to 2.6 pounds in the second quarter, reached a peak of 3.1 pounds in the third quarter and declined to 2.7 pounds in the last quarter. Since 1949, consumption in the third quarter was about 30 to 35 percent higher than in the first quarter. Large consumption of corn sirup in the last half year results from increased use in canned fruits, ice cream, and confectionery.

While consumption of corn sirup varies considerably from quarter to quarter within the year, there has been only a slight change in the quarterly pattern since 1949. Quarterly consumption has become slightly less important in the first and fourth quarters and slightly more important in the second and third quarters.

Per capita consumption of dextrose (corn sugar) declined slightly from 4.5 pounds in 1949 to a low of 3.8 pounds in 1957 and then increased irregularly to approximately 5.0 pounds in 1963 and thereafter (table 10).

There was only a small seasonal variation in dextrose consumption over the period observed. During 1960-64, per capita dextrose consumption increased from 1.1 pounds in the first quarter to 1.2 pounds in both the second and third quarters, and then declined to 1.1 pounds in the last quarter. Consumption in the high quarter is usually no more than 10 to 15 percent more than in the low quarter. About half the dextrose consumed in the United States is used in commercial bakery products, the output of which generally has little seasonal variation. Similarly, use of dextrose in other commercially prepared foods has varied but little from quarter to quarter.

There have been only small changes in the quarterly pattern of consumption during 1949-66. Consumption in the third quarter has become slightly less important and in the second quarter slightly more important.

Cocoa and Chocolate 4/

Per capita consumption of cocoa and chocolate (cocoa bean equivalent 5/) increased from an average of 3.5 pounds during 1955-59 to 4.1 pounds in 1966 (table 11). Increased cocoa use apparently was stimualted by relatively low cocoa bean prices in recent years.

There is a small seasonal variation in cocoa consumption. During 1960-64, per capita cocoa consumption declined slightly in the first and second quarters

4/ Robert G. Ainsworth, formerly with the Food Consumption Section, ERS, was primarily responsible for developing the quarterly cocoa products data.

5/ The cocoa bean equivalent may be converted to an unsweetened chocolate basis (chocolate liquor) by the factor 0.80.

Table 11.--Cocoa and chocolate, cocoa bean equivalent basis 1/: Civilian per capita consumption, by quarters, 1953-66

Period	Estimated consumption					Percentage of annual total			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Annual total	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
	Lb.	Lb.	Lb.	Lb.	Lb.	Pct.	Pct.	Pct.	Pct.
Average:									
1955-59	0.91	0.85	0.81	0.94	3.5	25.9	24.1	23.2	26.8
1960-64	.98	.92	.89	1.03	3.8	25.6	24.2	23.3	26.9
1953	1.06	.92	.90	.97	3.8	27.5	23.9	23.4	25.2
1954	.85	.77	.78	.88	3.3	25.9	23.5	23.8	26.8
1955	.81	.74	.80	.88	3.2	25.1	22.9	24.8	27.2
1956	.95	.90	.84	1.00	3.7	25.7	24.4	22.8	27.1
1957	.99	.94	.83	1.04	3.8	26.1	24.7	21.8	27.4
1958	.88	.78	.78	.88	3.3	26.5	23.5	23.5	26.5
1959	.91	.88	.81	.91	3.5	25.9	25.1	23.1	25.9
1960	.93	.87	.82	.96	3.6	26.0	24.3	22.9	26.8
1961	.95	.96	.91	1.07	3.9	24.4	24.7	23.4	27.5
1962	.96	.93	.89	1.01	3.8	25.3	24.5	23.5	26.7
1963	1.02	.91	.92	1.03	3.9	26.3	23.5	23.7	26.5
1964	1.02	.93	.90	1.06	3.9	26.1	23.8	23.0	27.1
1965	1.02	.97	.93	1.15	4.1	25.1	23.8	22.8	28.3
1966 2/	1.06	.98	.97	1.09	4.1	25.8	23.9	23.7	26.6
1967									
1968									
1969									

1/ Consumption data may be converted to an unsweetened chocolate basis (chocolate liquor) by using a factor of 0.80 because there is an approximate loss of 20 percent in removing the shells, roasting, and grinding the chocolate nibs.

2/ Preliminary

Source: Foreign trade data from Foreign Trade Division, U.S. Bureau of the Census. Processed and semiprocessed cocoa and chocolate products are converted to bean equivalent using conversion factors from Conversion Factors and Weights and Measures, Stat. Bul. No. 362, June 1965, pp. 42-43. Quarterly cocoa bean grind from Business and Services Administration, U.S. Dept. of Commerce.

to a low of 0.89 pound in the third quarter and reached a peak of 1.03 pounds in the last quarter, a 15 to 20 percent seasonal variation. A substantial portion of cocoa and chocolate apparently is produced during the second and third quarters for later use in confectionery, the major use of cocoa and chocolate. There was virtually no change in the quarterly consumption pattern of cocoa during 1953-66.

Methodology

Estimates of quarterly consumption are based on disappearance measured at an early point in domestic marketing channels. Stock data generally are not available from commercial food processors, wholesalers, and retailers. Actual use of these products by consumers may occur in a later quarter because of the lag between market disappearance and final consumption. This lag may be longer for sweeteners and cocoa than for many other products because of the large use of these products in commercially processed products.

For corn sweeteners, both annual and quarterly consumption consist of reported domestic deliveries (imports are negligible). For cocoa, the consumption data consist of the domestic cocoa bean grind plus the net cocoa bean equivalent of imported processed cocoa and chocolate products.

Annual sugar consumption is measured by 2 different methods.6/ Method A measures deliveries from refiners and importers to primary buyers, such as industrial and institutional users, and to wholesalers and retailers. An adjustment is made for annual changes in "invisible" stocks (inventories held by primary buyers). Method B measures consumption as total annual supply adjusted to changes in visible stocks (stocks held by sugar refiners and beet sugar companies) minus exports and livestock feed use. A balancing item--consisting mostly of refining loss--reconciles the difference between Method A and Method B.

There are substantial measurement problems in using Method B for quarterly data. Consequently, quarterly consumption data for sugar are derived by using quarterly deliveries adjusted to annual consumption data.

6/ For further information on derivation of annual data on sugar consumption, see U.S. Food Consumption, Statistical Handbook No. 364, June 1965, pp. 156-157.